

Geographical Distribution : Rivers of Burma (chiefly the Irrawaddy, but perhaps others).

Habitat and Biology : Riverine in middle and upper reaches. More data needed.

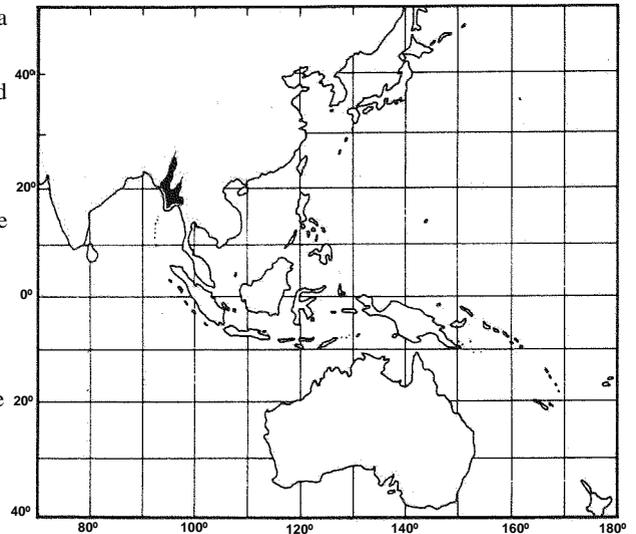
Size : To about 16 cm standard length.

Interest to Fisheries : Contributes to riverine artisanal fisheries, but catches not recorded.

Local Names : -

Literature : See under synonyms.

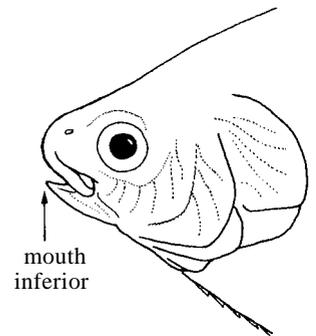
Remarks : Rather few specimens seem to have been studied (Vongratana, 1980, saw only three).



2.2.5 SUBFAMILY DOROSOMATINAE

FAO Names : En - Gizzard shads.

Diagnostic Features : Moderate-sized herring-like fishes (to about 30 cm standard length or a little more); fully scuted along belly, scutes also present on back before dorsal fin in some (*Clupanodon*). Mouth inferior or subterminal, sometimes terminal, snout usually projecting; upper jaw not evenly rounded in front, but with a distinct median notch into which the symphysis of the lower jaw fits; no teeth. Gillrakers fine and numerous; a pair of pharyngeal pouches above 4th gill arch, apparently for collecting food sieved by gillrakers. Dorsal fin at about midpoint of body, last dorsal finray filamentous and long (except in the Indo-Pacific *Gonialosa* and *Anodontostoma*); anal fin moderate, up to 38 finrays; pelvic fin under or a little before dorsal fin origin, with i 7 finrays. Scales usually well attached, usually 38 to 55 in lateral series (but 43 to 71 scales in *Gonialosa* and up to 86 in some *Dorosoma*). Stomach muscular, gizzard-like. A dark spot often present behind gill opening, in some species followed by a series of spots.

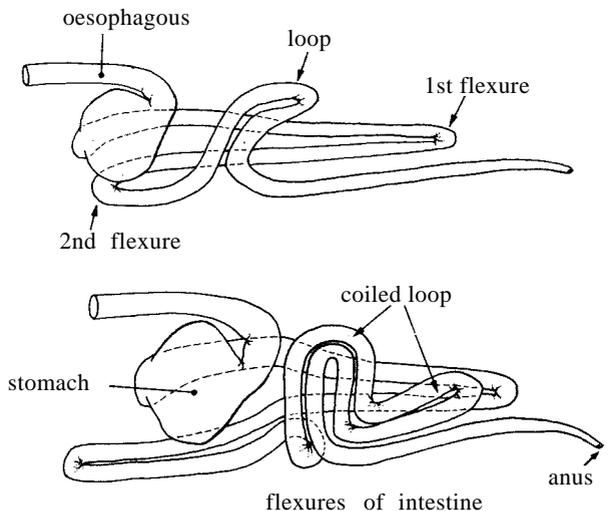


Biology, Habitat and Distribution : The Dorosomatinae are either marine, pelagic and apparently anadromous, or estuarine or purely fluviatile, but more data is needed to show whether all species spawn in freshwater. Food, together with mud and other material grubbed from the bottom, is filtered by the gillrakers and believed to be concentrated in the pharyngeal pouches, thereafter being everted as a bolus and passed down the pharynx to the muscular stomach.

Interest to Fisheries : Gizzard shads contribute rather little to fisheries (perhaps about 10 000 tons a year), but may be locally important.

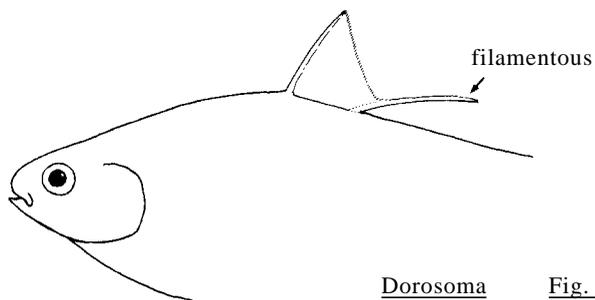
Remarks : Separation of the gizzard shads from the shads (subfamily Alosinae) may be artificial; a gizzard is found in the shads *Brevoortia* and *Ethmidium*, and a more or less muscular stomach occurs in *Hilsa*, *Gudusia* and *Ethmalosa* (as well as in the clupeine *Opisthonema*). Nevertheless, only the gizzard shads have a unique feature: the intestine is doubled into a characteristic loop (the so-called 'third primary flexure'), either a simple loop, or a loop that is coiled or doubled-back on itself (Nelson & Rothman, 1973).

There are 5 genera (1 Atlantic coasts and drainage of North and central America, 4 Indo-West Pacific coasts and drainage) and about 22 species, the largest genus being *Nematalosa* (9 species, but more to be described).

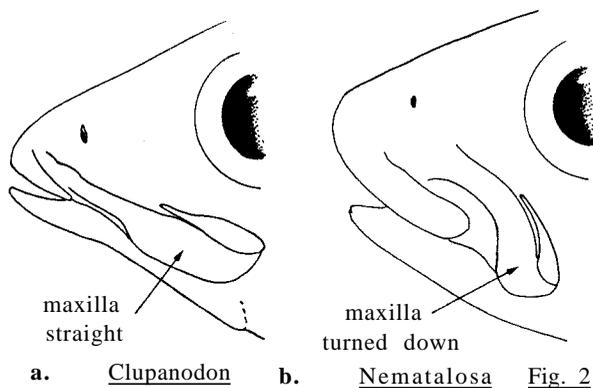


Key to the Genera

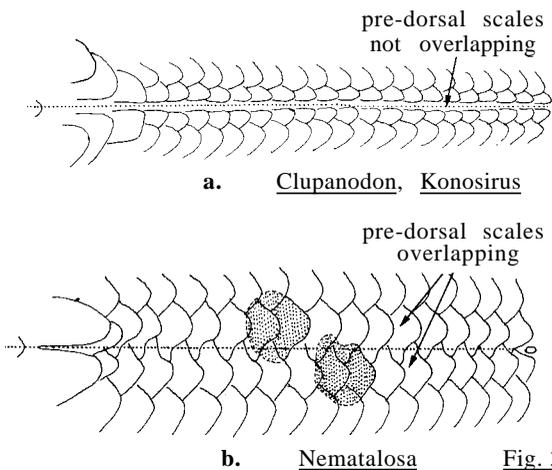
- 1a. New World only; anterior (first) supra-maxilla present (but thin and scale-like); last dorsal finray produced, filamentous (Fig.1).....**Dorosoma**
- 1b. Indo-Pacific only; no anterior supra-maxilla
 - 2a. Last dorsal finray produced, filamentous
 - 3a. Gillrakers of first arch at least 3/4 length of corresponding gill filaments; mouth subterminal, upper jaw straight (Fig. 2a); pre-dorsal scales paired, but not overlapping in midline (Fig. 3a)
 - 4a. Post-pelvic scutes 11 or 12; dorsal scutes present. **Clupanodon**
 - 4b. Post-pelvic scutes 14 to 16; no dorsal scutes . . **Konosirus**
 - 3b. Gillrakers of first arch not more than half length of corresponding gill filaments; mouth inferior, upper jaw curved downward (Fig. 2b); pre-dorsal scales paired and overlapping in midline (Fig. 3b) **Nematalosa**
 - 2b. Last dorsal finrays normal, not filamentous
 - 5a. A median series of pre-dorsal scales (Fig. 4); 38 to 45 scales in lateral series (usually 40 to 43); marine **Anodontostoma**
 - 5b. Paired pre-dorsal scales, overlapping in midline; 43 to 71 scales in lateral series; freshwater, rivers affluent to Bay of Bengal **Gonialosa**



Dorosoma Fig. 1

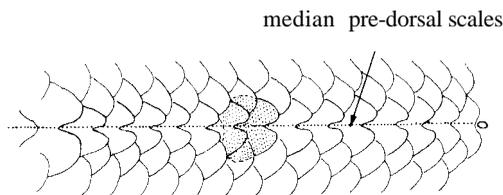


a. **Clupanodon** b. **Nematalosa** Fig. 2



a. **Clupanodon, Konosirus**

b. **Nematalosa** Fig. 3



Anodontostoma Fig. 4

Dorosoma Rafinesque, 1820

CLUP Doros

Dorosoma Rafinesque, 1820, Western Review & Misc.Mag., 2(3, April):171 (see Fowler, 1945:6, 8) (type: Dorosoma notata Rafinesque = Megalops cepediana LeSueur). Chatoessus Cuvier, 1829, Règne animal, 2nd ed., 2:320 (in part; restricted to Megalops cepediana by Valenciennes, 1847). Signalosa Evermann & Kendall, 1898, Bull.U.S.Fish Comm., 17:127 (type: Signalosa atchafalayae = Meletta petenesis Günther).

Diagnostic Features : Medium-sized gizzard shads (to 35 cm standard length, usually to about 20 to 25 cm), the body compressed and moderately deep in some. Snout projecting, rounded, mouth small, terminal or inferior; upper jaw with a thin, scale-like anterior (first) supra-maxilla, lower jaw included when mouth closed. Gillrakers fine and numerous. Last dorsal finray filamentous (except in young); anal fin comparatively long, with 17 to 38 finrays, its origin below or just behind base of last dorsal finray. Scales moderate (less than 50 in lateral series) and regular, or numerous (more than 50) and somewhat irregular. A dark spot behind gill opening in most specimens.

Biology, Habitat and Distribution : Coastal saltwater and brackishwater to freshwater, the latter either for spawning or as a permanent habitat. All species are filterfeeders. Found associated with the Atlantic drainage of North and central America and the Pacific drainage of central America.

Interest to Fisheries : Of limited local interest.

Species : Miller (1960) recognized five species in two subgenera, accepted by Nelson & Rothman (1973):

Subgenus Dorosoma (mouth inferior; scales more than 50)

D. anale Meek, 1904, drainage of western Gulf of Mexico

D. cepedianum (LeSueur, 1818), Atlantic and Gulf drainage of North and central America

D. chavesi Meek, 1907, Nicaraguan lakes

D. smithi Hubbs & Miller, 1941, Pacific drainage of Mexico.

Subgenus Signalosa (mouth terminal; scales less than 50)

D. petenense (Günther, 1866), Atlantic and Gulf drainage of North and central America.

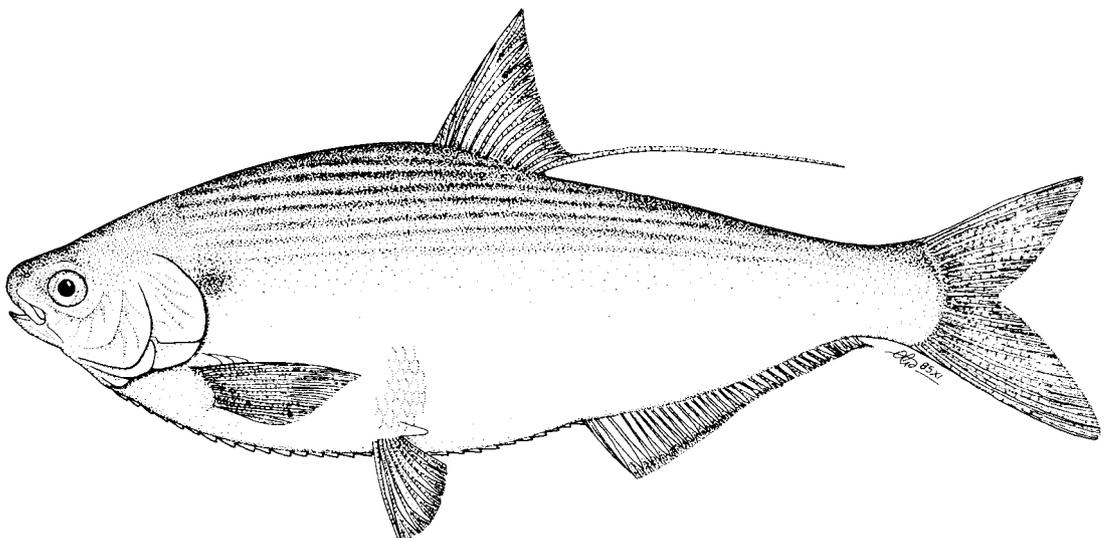
Domsoma anale Meek, 1904

CLUP Doros 2

Dorosoma anale Meek, 1904, Publs Field Mus., (93)(zool.Ser.), 5:93, fig. 26 (El Hule = Rio Papaloapán, Mexico).

Synonyms : Dorosoma anale - Miller, 1950:395 (revision); Idem, 1960:373 (key only); Nelson & Rothman, 1973:170, pl. 11B (photo) (bibliography).

FAO Names : En - Mexican river gizzard shad.



Diagnostic Features : Body moderately deep, its depth 34 to 40% of standard length, belly with 18+ 10 or 11 scutes. Mouth small, inferior; lower jaw short, about 8 to 10% of standard length. Last dorsal finray long, about equal to distance snout tip to about mid-pectoral fin; anal fin long, with 29 to 38 finrays. Scales small, somewhat irregular, 70 to 82 in lateral series. A dark spot behind gill opening. Resembles *D. cepedianum*, whose southward range it continues, but that species has fewer scales (52 to 70, usually 58 to 65) and a shorter anal fin base (equals anal fin origin to hind third of pectoral fin; cf. to front third in *D. anale*); *D. petenense* has fewer scales (41 to 48). Species of *Opisthonema* also have a filamentous last dorsal finray and dark spot behind gill opening, but anal fin short and well behind dorsal fin base. Other clupeids lack dorsal filament.

Geographical Distribution : Mexico (Rio Papaloapan in southern Veracruz and Oaxaca) southward to northern Guatemala (Rio Ucumacinta basin).

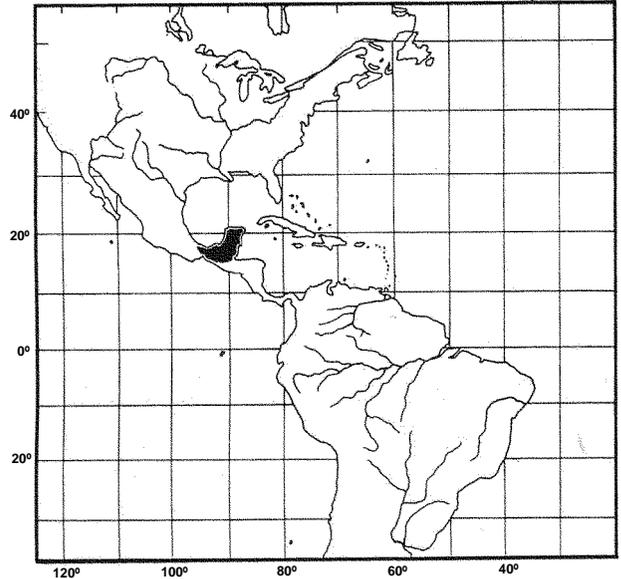
Habitat and Biology : Riverine, apparently not yet recorded in brackishwater. More data needed.

Size : To about 20 cm standard length.

Interest to Fisheries : Perhaps of small local interest.

Local Names :-

Literature : Only six references found by Nelson & Rothman (1973), none dealing with the biology of the species.



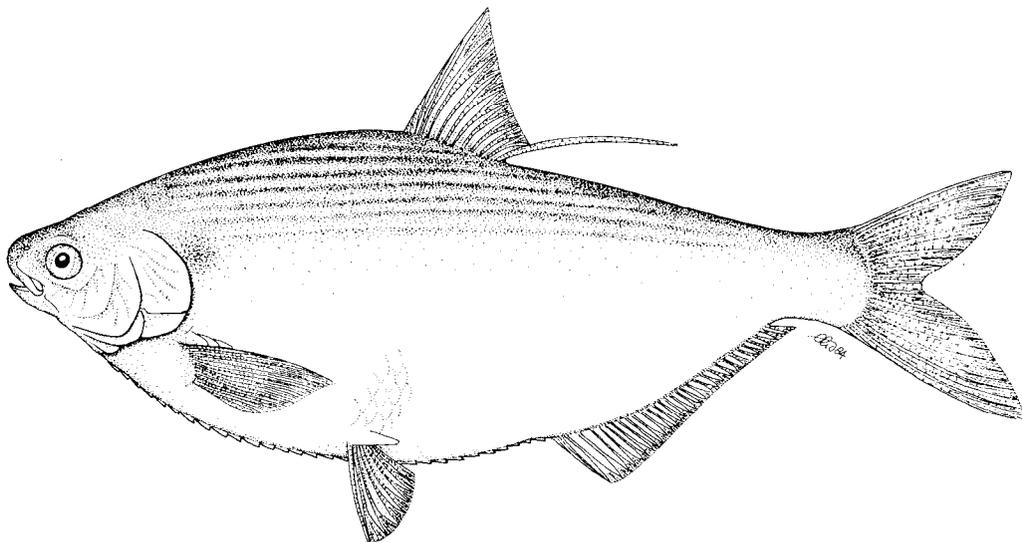
Dorosoma cepedianum (LeSueur, 1818)

CLUP Doros 1

Megalops cepediana LeSueur, 1818, *J.Acad.nat.Sci.Philad.*, 1:361 ('Philadelphia' = residence of LeSueur; exact locality not known, presumably Chesapeake and Delaware Rays).

Synonyms : *Clupea heterura* Rafinesque, 1818:354 (Ohio River); *Dorosoma notata* Rafinesque, 1820:172 (falls of Ohio River); *Chatoessus ellipticus* Kirtland, 1838:169, 195 (*nomen nudum*); *Megalops bimaculata* Valenciennes, 1847:104 (*nomen nudum*, in synonymy of *cepedianus*); *Chatoessus insociabilis* Abbott, 1861:365 (pond 2 miles below Trenton, New Jersey); *Dorosoma cepedianum exile* Jordan & Gilbert, 1883:585 (Galveston Bay, Texas); *Dorosoma lacepedi* Berry, 1958:318 (age and growth); *Dorosoma cepedianum* - Miller, 1950:392 (revision); *Idem*, 1960:373, fig. 1, also 2-4 (embryos, larvae) (revision); FWNA, 1964:444, fig. 116 (review); Nelson & Rothman, 1973:170, pl. llc (photo) (bibliography from 1960, rather complete); Whitehead & Bauchot, in press (types of *cepediana*, status of *bimaculata*).

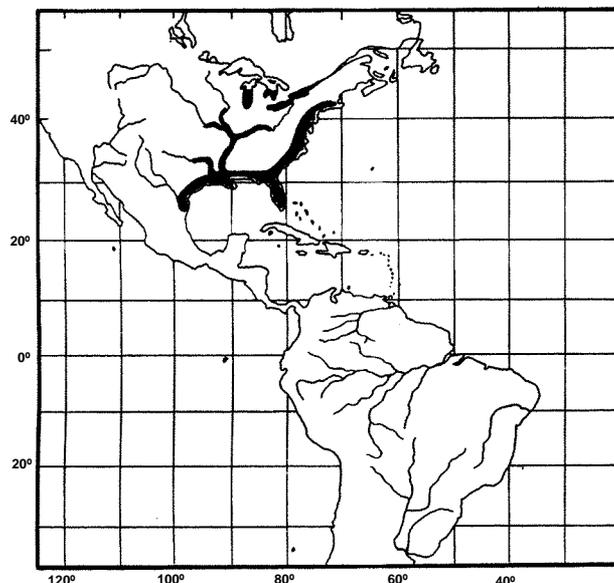
FAO Names : En - American gizzard shad.



Diagnostic Features : Body moderately deep, its depth about 30 to 40% of standard length, belly with 17 to 20 - 10 to 14 scutes. Mouth small, inferior; lower jaw short, about 9 to 12% of standard length. Last dorsal finray long, about equal to distance from snout tip to mid-pectoral fin or beyond; anal fin long, with 25 to 36 finrays. Scales small, somewhat irregular, 52 to 70 in lateral series (usually 58 to 65). A dark spot behind gill opening. Resembles *D. anale*, which continues its southward range, but that species has more scales (70 to 82) and a longer anal fin base (equals anal fin origin to front third of pectoral fin; cf. to hind third in *D. cepedianum*); *D. petenense* has fewer scales (41 to 48). Species of *Opisthonema* also have a filamentous last dorsal finray and dark spot behind gill opening, but anal fin not longer than head and well behind dorsal fin base. Other clupeids lack dorsal filament. See CLUP Doros 1, Fishing Area 31.

Geographical Distribution : Atlantic and Gulf of Mexico drainage of North and central America (southeastern South Dakota and central Minnesota, the Great Lakes drainage, i.e. in Lake Erie, southern parts of Lakes Huron and Michigan, Lake Ontario basin; not Lake Superior; extreme southern New York southward to the Mississippi system and smaller rivers affluent to the Gulf southward to the Rio Pánuco, Mexico.

Habitat and Biology : Mainly in freshwater in large rivers, reservoirs, lakes, swamps, temporary flood-water pools, etc., but adults also found in brackish or saline water of estuaries or bays, preferring quieter open waters. Filter-feeding, almost entirely herbivorous; the food is strained by the numerous fine gillrakers, then presumably transferred in a mucus stream to the pharyngeal pouches, concentrated and in some way everted as a bolus into the pharynx. Breeds near surface in fresh water from late winter (mid-March) through most of the summer (at least to about mid-August) in ponds, lakes and large rivers; eggs adhesive and sink (embryonic and larval development figured and described by Miller, 1960).



Size : To about 35 cm standard length (20.5 inches total length recorded), usually about 20 cm.

Interest to Fisheries : Small catches only recorded (in 1983 a total catch of only 461 tons). It is valued as a forage for various game fishes and has been used to some extent for fertilizer or cattle food.

Local Names : USA: Eastern gizzard shad, Gizzard shad (AFS list), Hickory shad, Mud shad, Skipjack.

Literature : Miller (1960 - excellent review of taxonomy and biology); Nelson & Rothman (1973 - literature from 1960, 158 references).

Remarks : Hybrids between this species and *D. petenense* were reported in the Ohio River by Minckley & Krumholz (1960). The two species overlap over much of their ranges and frequently occur together.

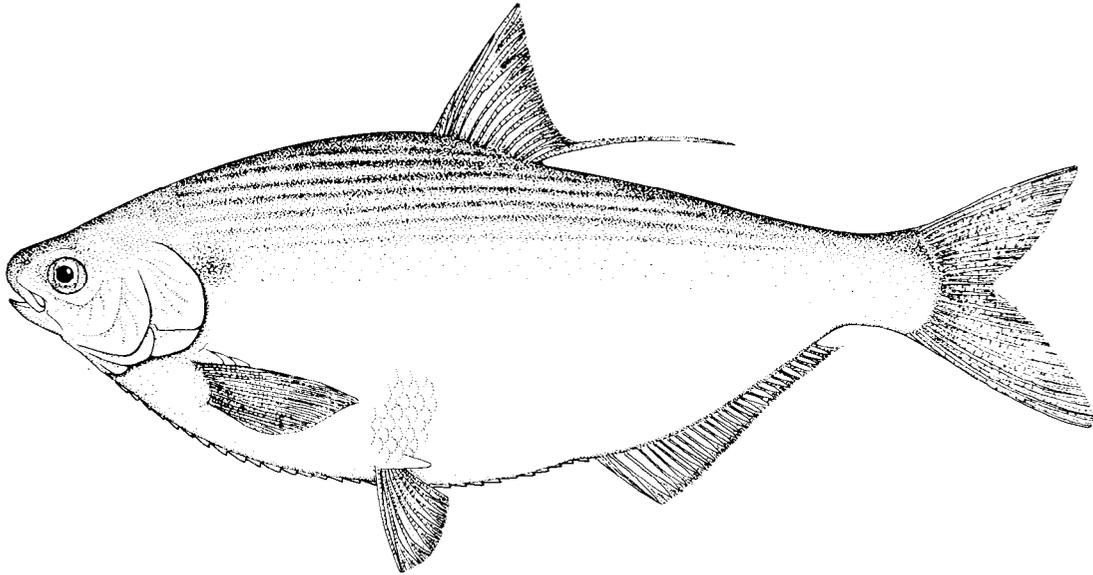
Dorosoma chavesi Meek, 1907

CLUP Doros 3

Dorosoma chavesi Meek, 1907, Publ. Field Mus. (Zool. Ser.), 7:112 (Laguna Jenicero, between Lakes Managua and Nicaragua).

Synonyms : *Dorosoma chavesi* - Miller, 1950:398 (revision); *Idem*, 1960:373 (key only); Astorqui, 1971:29, fig. 8 (descr., Lakes Managua and Nicaragua); Nelson & Rothman, 1973:172, fig. 12A (photo) (bibliography).

FAO Names : En - Nicaragua gizzard shad.



Diagnostic Features : Body moderately deep, its depth about 34 to 40% of standard length, belly with 15 to 18 + 9 to 12 scutes. Mouth relatively large, inferior or subterminal; lower jaw comparatively long, about 11 to 16% of standard length, upper jaw reaching to vertical from eye centre. Last dorsal finray long, but less than distance from snout tip to pelvic fin base; anal fin moderately long, with 24 to 30 finrays. Scales small, somewhat irregular, 72 to 86 in lateral series. A dark spot behind gill opening. No other *Dorosoma* species found so far south (*D. anale* of northern Guatemala and southern Mexico has 29 to 38 anal finrays; *D. smithi* of the Pacific drainage of central America a smaller mouth). No other clupeid in the area resembles *D. chavesi*; *Tarpon atlanticus* has a dorsal filament, but lacks scutes, lower jaw projects, scales less than 50.

Geographical Distribution : Nicaragua (lakes Managua and Nicaragua and affluent streams or rivers).

Habitat and Biology : Riverine and lacustrine. More data needed, but presumably feeding and breeding similar to other *Dorosoma* species.

Size : To 18 cm standard length.

Interest to Fisheries : Perhaps of small local importance.

Local Names :-

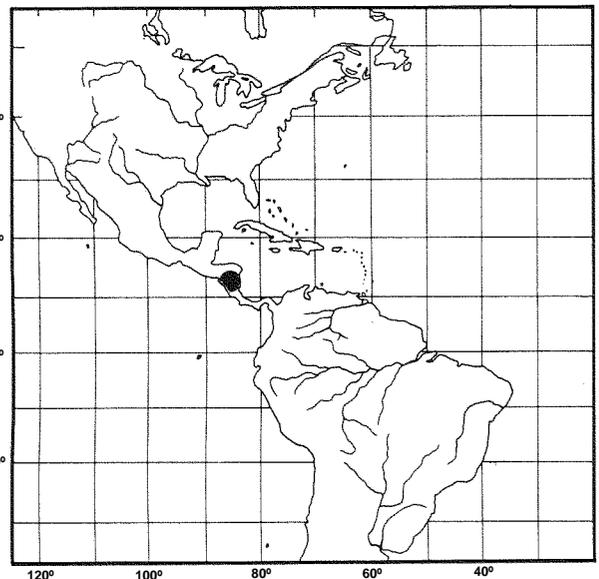
Literature : Miller (1950 - revision); Astorqui (1971 - descr.).

Remarks : Miller (1950) found differences between his specimens from Lake Managua and Lake Nicaragua and suspected that the falls between these lakes served to isolate the Managua population. Astorqui (1971) confirmed many of Miller's differences, in particular:

Lake Managua: head length 32.6 to 35.5%, anal fin base 24.6 to 27.1%, pre-pelvic distance 49.2 to 53% of standard length

Lake Nicaragua: head length 29.2 to 32.3%, anal fin base 27.6 to 29.6%, pre-pelvic distance 43.7 to 49.5% of standard length.

However, neither author proposed a subspecies.



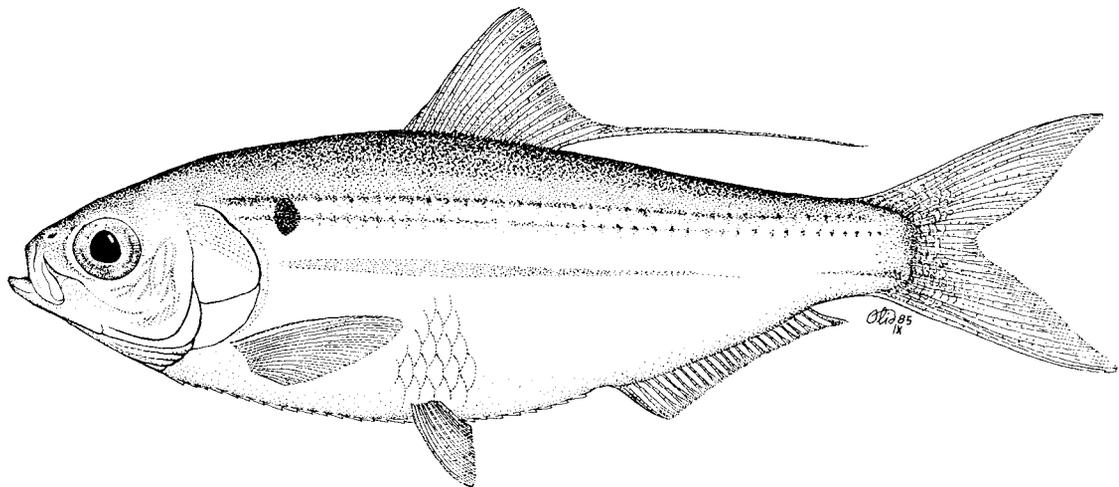
Dorosoma petenense (Günther, 1866)

CLUP Doros 5

Meletta petenensis Günther, 1866, Proc.zool.Soc.Lond., (3):603 (Lake Petén, Guatemala) (emended to petenense by Jordan & Evermann, 1896:417).

Synonyms : Chatoessus mexicanus Günther, 1868:409 (Mexico, New Orleans, Louisiana); Signalosa atchafalaya Evermann & Kendall, 1898:127, pl. 7, fig. 4 (Atchafalaya River at Melville, Louisiana; also Mississippi); Signalosa mexicana campi Weed, 1925:143 (Resaca de la Guerra, on or near Media Luna Ranch, Brownsville, Texas); Signalosa atchafalaya vanhyningi Weed, 1925:145 (Prairie Creek, 6 miles southeast of Gainesville, Florida); Dorosoma petenense - Miller, 1960:373 (key only); FWNA, 1964:448, fig. 117 (review); Nelson & Rothman, 1973:173, pl. 12C (photo) (bibliography from 1960, rather complete).

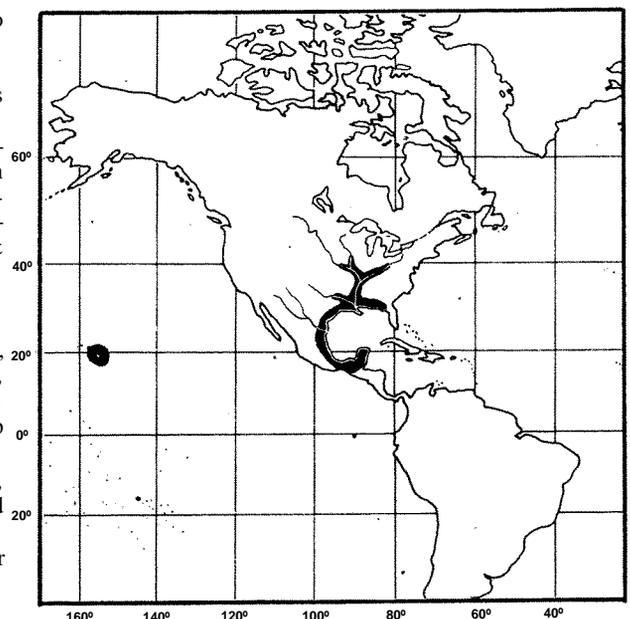
FAO Names : En - Threadfin shad.



Diagnostic Features : Body moderately deep, its depth about 30 to 40% of standard length, belly with 15 to 18 + 8 to 12 scutes. Mouth small, terminal. Last dorsal finray long, about equal to distance from snout tip to mid-pectoral fin or beyond; anal fin relatively short, with 17 to 27 finrays. Scales relatively large, regularly arranged, 41 to 48 in lateral series. A dark spot behind gill opening. Distinguished from D. cepedianum and other related species by the larger scales (more than 50 in other Dorosoma species, somewhat irregularly arranged) and terminal mouth (cf. inferior or at most subterminal in D. chavesi of Nicaragua). Species of Opisthonema also have a filamentous last dorsal finray and dark spot behind gill opening, but anal fin not longer than head and well behind dorsal fin base. Other clupeids lack dorsal filament.

Geographical Distribution : Gulf of Mexico drainage of North and central America (Mississippi system, from the Ohio River of Kentucky and southern Indiana southwestward to Oklahoma, and south to Texas and Florida, also rivers around the Gulf to northern Guatemala; also Belize River, British Honduras). Invasion of the Ohio River basin appears to have been relatively recent; the species has been planted in Virginia, West Virginia, Georgia, Pennsylvania, Kansas, Arizona, Nevada, California and New Mexico (Minckley & Krumholz, 1960), and introduced in 1958 into Hawaiian waters (Oahu, Kauai, Maui) (Brock, 1960).

Habitat and Biology : Pelagic, often schooling, mainly in freshwater in large rivers, reservoirs, lakes, swamps, temporary floodwater pools, etc., but adults also found in brackish or saline water of estuaries and bays (up to 30 ‰ salinity; juveniles to about 15‰). Filter-feeding, but not entirely herbivorous since copepods, cladocerans and even fish fry have been recorded; method of feeding presumably similar to that of D. cepedianum. Breeds in spring and again in autumn, in open waters near or over plants or other objects; eggs slightly adhesive.



Size : To 18 cm standard length in southern part of range, but only about 10 to 12 cm in northern part.

Interest to Fisheries : Valued as a food for larger game fishes, hence its introduction into other waters; also as a potential live bait (e.g. for tuna in Hawaii).

Local Names :-

Literature : Minckley & Krumholz (1960 - distribution, hybrids); Miller (i.e. FWNA, 1964 - review); Nelson & Rothman (1973 - literature from 1960, 103 references).

Remarks : Miller (1960, 1964) considered Signalosa as merely a subgenus of Dorosoma; Minckley & Krumholz (1960) gave it generic status. Nelson & Rothman (1973), the latest reviewers, favoured subgeneric status and are followed here. For hybridization with D. cepedianum, see that species.

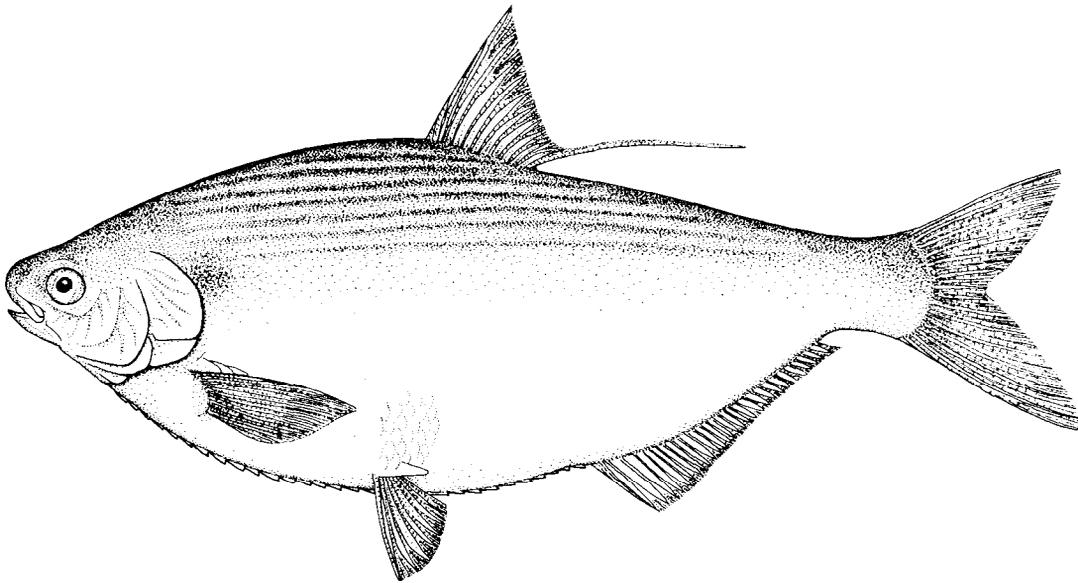
Dorosoma smithi Hubbs & Miller, 1941

CLUP Doros 4

Dorosoma smithi Hubbs & Miller, 1941, Copeia, (4):232, fig. 1 (Rio Piaxtla near Piaxtla, Sinaloa, Mexico).

Synonyms : Dorosoma smithi - Miller, 1950:401 (revision); Idem, 1960:373 (key only); Branson, McCoye & Sisk, 1960:218 (Sonora, Mexico); Alvarez del Villar, 1970:41 (key); Nelson & Rothman, 1973:173, fig. 12B (photo) (bibliography).

FAO Names : En - Pacific gizzard shad.



Diagnostic Features : Body moderately deep, its depth about 32 to 40% of standard length, belly with 15 to 18 + 9 to 12 scutes. Mouth small, inferior, lower jaw about 9 or 10% of standard length. Last dorsal finray long, but less than distance from snout tip to pelvic fin base; anal fin relatively short, with 22 to 29 finrays. Scales small, somewhat irregular, 71 to 79 in lateral series. A dark spot behind gill opening. Opisthonema species also have a filamentous last dorsal finray and a dark spot behind gill opening, but anal fin not longer than head and well behind dorsal fin base. Other clupeids lack dorsal filament.

Geographical Distribution : Pacific drainage of northwestern Mexico (Río Piaxtla, Río del Fuerte, Río Sinaloa system, Río de Mocorito, Río Muerto, Río Yaqui system, i.e. between Sinaloa and Sonora).

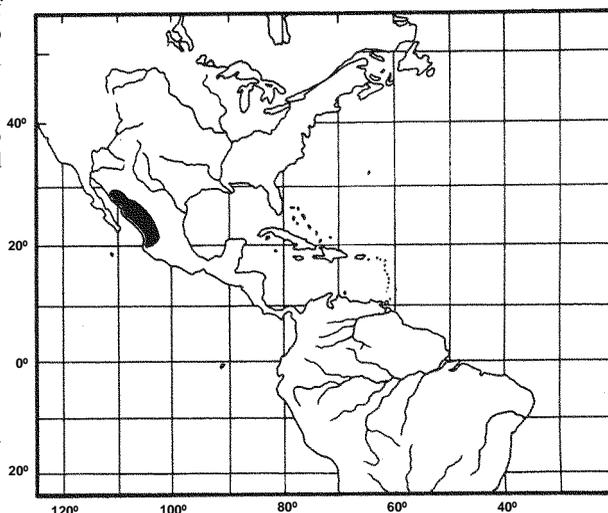
Habitat and Biology : Riverine, perhaps also lacustrine. More data needed, but presumably feeding and breeding similar to other Dorosoma species.

Size : To at least 14 cm standard length, perhaps more.

Interest to Fisheries : Perhaps of small local importance.

Local Names : -

Literature : Nelson & Rothman (1973 - 6 references).

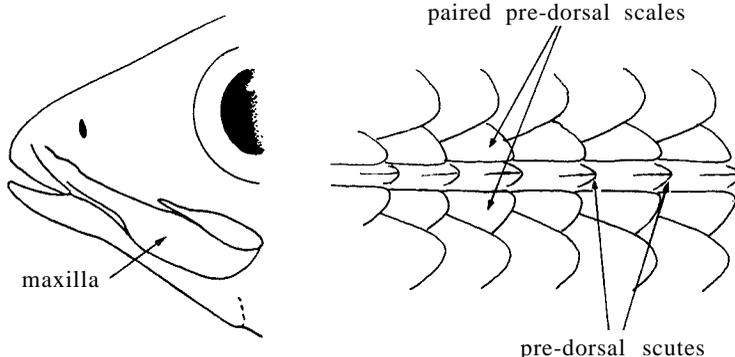


Clupanodon Lacepede, 1803

CLUP Clupan

Clupanodon Lacepede, 1803, Hist.nat.pois.,5:465 (type: Clupea thrissa Linnaeus; designated by Bleeker, 1872:112. Subsequent invalid designations were Clupeonia jussieui Valenciennes = Sardinella jussieui, by Jordan & Gilbert, 1883:574; Clupea pilchardus Walbaum = Sardina pilchardus, by Jordan & Evermann, 1896:422; and Megalops oglina LeSueur = Opisthonema oglinum, by Jordan & Seale, 1905:771). Thrissa Rafinesque, 1815, Anal.nature:88 (type: Clupea thrissa Linnaeus since Thrissa proposed to replace Clupanodon).

Diagnostic Features : Medium-sized marine gizzard shads (to about 26 cm standard length); belly fully scuted, also pre-dorsal scutes present. Mouth subterminal; maxilla slender, not turned downward at tip, with a single spatulate supra-maxilla. Gillrakers fine and numerous (about 200 to 400, increasing with size of fish), at least 3/4 length of corresponding gill filaments on first arch. Last dorsal finray filamentous; anal fin shorter than head, with 22 to 28 finrays. Pre-dorsal scales paired, but not overlapping in midline. Dark spots on flanks. Closely resembles Konosirus, which lacks pre-dorsal scutes and has more ventral scutes (32 to 37; cf. 27 to 31 in Clupanodon). Species of Nematolosa have an inferior mouth with its edges flared outward.



Biology, Habitat and Distribution : See species.

Interest to Fisheries : See species.

Species : Nelson & Rothman (1973:164) included Konosirus punctatus in this genus, arguing that monotypy is infectious, thus inflating the rank of all species whenever new differences are found. However, the gizzard shads seem sufficiently well known to avoid this, and Konosirus is kept distinct here:

C. thrissa (Linnaeus, 1758), western North Pacific (also Andaman Sea).

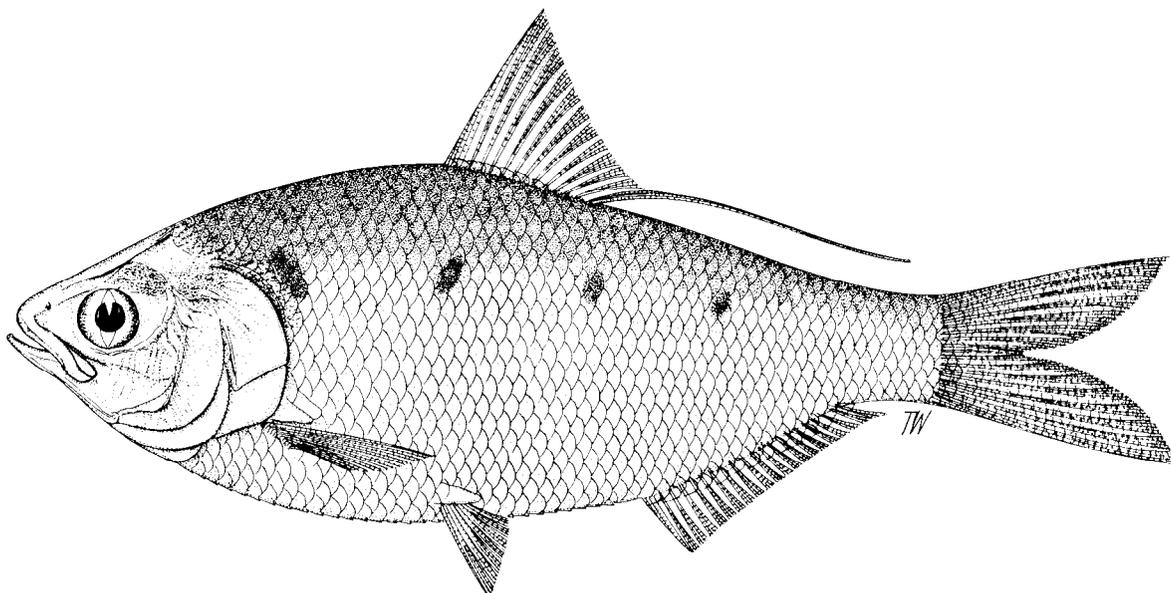
Clupanodon thrissa (Linnaeus, 1758)

CLUP Clupan 1

Clupea thrissa Linnaeus, 1758, *Syst.nat.* 10th ed., 1:318 (name from Osbeck, 1757:257; diagnosis derived from that for Mystus altus Linnaeus, 1754:26 - invalid!).

Synonyms: Clupea triza Linnaeus, 1759:251 (China); Chatoessus maculatus Richardson, 1846:308 (Vachell specimen from Canton, lost); Chatoessus osbeckii Valenciennes, 1847:106 (China); Chatoessus haihoensis Oshima, 1926:3 (Hainan); Clupanodon thrissa - Fowler, 1941:557 (Japan, China, the Philippines, ? Indonesia, but Bombay incorrect); Whitehead, 1962:100 (key, diagnostic features); Idem, 1966:34, 37 (Richardson's triza and maculatus); Idem, 1967:98 (types of osbeckii); Nelson & Rothman, 1973: 169, pl. 11A (photo), map 4 (synon., descr., refs); Wongratana, 1980:170, pls 118, 119 (revision); Whitehead & Bauchot, in press (types of osbeckii).

FAO Names : En - Chinese gizzard shad.



Diagnostic Features : Body moderately deep, its depth 33 to 37% of standard length, compressed, belly with 16 to 19 (usually 18) + 9 to 12 (usually 10 or 11) total 27 to 31 (usually 29 or 30) scutes; pre-dorsal scutes present, 17 to 26 (usually 20 to 25). Mouth subterminal; gillrakers of first arch at least 3/4 length of gill filaments. Last dorsal finray filamentous; anal finrays 22 to 28. Vertebrae 43 to 46 (usually 44 or 45). A dark spot behind gill opening, followed by further spots on flank. Resembles Konosirus punctatus, which is more slender (depth 28 to 33% of standard length), lacks pre-dorsal scutes and has more ventral scutes (32 to 37); species of Nematalosa have an inferior mouth and gillrakers not more than half length of gill filaments. Other clupeids lack a dorsal filament.

Geographical Distribution : Coasts and rivers of northwestern Pacific (China to about 25°N, apparently south to Viet Nam, but Philippine records of Fowler (1941) appear doubtful); specimens from Phuket I, Thailand (Andaman Sea), were recorded by Wongratana (1980:171).

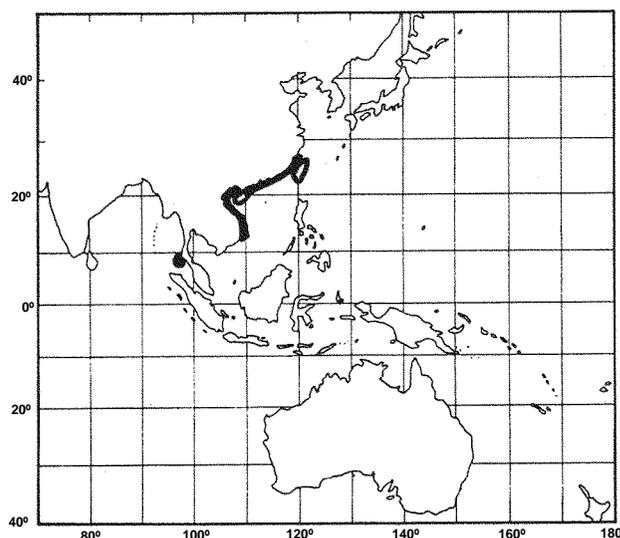
Habitat and Biology : Coastal and in rivers, presumably tolerating brackishwater, if not fully fresh conditions. More data needed.

Size : To about 26 cm standard length.

Interest to Fisheries : Of small local interest (Liu & Shen, 1957 - Taiwan); the Korean catch in 1983 was 14 119 tons.

Local Names : CHINA: Hwang yu, Wong u (= Yellow fish - Canton).

Literature : Nelson & Rothman (1973 - 76 references).



Remarks : The ranges of Clupanodon thrixa and Konosirus punctatus overlap in the East China Sea (Hong Kong north to Taiwan); possibly the two have been confused in this area.

Konosirus Jordan & Snyder, 1900

CLUP Kono

Konosirus Jordan & Snyder, 1900, Proc.U.S.natl.Mus., 23:349 (type: Chatoessus punctatus Temminck & Schlegel. Subsequent invalid designation Chatoessus nasus Bloch = Nematalosa nasus, by Jordan, 1920) (misspelt Konosirus by Jordan & Snyder, 1901:53). Nealosa Herre & Myers, 1931, Lingnan Sci.J., (10):236 (type: Chatoessus punctatus Temminck & Schlegel).

Diagnostic Features : Medium-sized marine gizzard shads (to about 24 cm standard length); belly fully scuted, but no pre-dorsal scutes. Mouth sub-terminal; maxilla fairly slender, not turned downward at tip, with a single curved supra-maxilla. Gillrakers fine and numerous (about 150 to 250, increasing with size of fish), at least 3/4 length of corresponding gill filaments; anal fin shorter than head, with 19 to 27 finrays. Pre-dorsal scales paired, but not overlapping in midline. Dark spots on flanks. Closely resembles Clupanodon; which has pre-dorsal scutes and fewer ventral scutes (27 to 31; cf. 32 to 37). Species of Nematalosa have an inferior mouth with its edges flared outward.

Biology, Habitat and Distribution : See species.

Interest to Fisheries : See species.

Species : Opinions have been divided whether this genus deserves recognition (see under Clupanodon), but they are kept separate here, with a single species in each:

K. punctatus (Temminck & Schlegel, 1846), western North Pacific.

Konosirus punctatus (Temminck & Schlegel, 1846)

CLUP Kono 1

Chatoessus Punctatus Temminck & Schlegel, 1846, Fauna Japonica, Poiss., pt 5, inst. 13:240, pl. 109, fig. 1 (Japan, southern coast of Nagasaki).

Synonyms : Chatoessus aquosus Richardson, 1846:307 (Hong Kong or Canton; Reeves specimen); Nealosa punctata: Herre & Myers, 1931:236 (Hong Kong); Clupanodon punctatus: Fowler, 1941:559 (Japan, Korea); Chu, Tchang & Chen, 1963:102, fig. 77 (East China Sea, review; Nelson & Rothman, 1973:164, fig. 10c (photo), map 4 (synon., descr., refs); Konosirus punctatus - Whitehead, 1962:100 (key, diagnostic features); Idem, 1966:33 (type of aquosus); Wongratana, 1980:172, pls 120, 121 (revision); Masuda et al., 1984:19, pl. 22B (colour photo) (compiles).

FAO Names : En - Konoshiro gizzard shad.

